



SBFP540D — NPN Epitaxial Planar Silicon Transistor

UHF to C Band Low Noise Amplifier, Oscillation Applications

Features

- Low noise : NF=0.9dB typ (f=1.8GHz).
- High cutoff frequency : $f_T=20\text{GHz}$ typ ($V_{CE}=1\text{V}$).
: $f_T=29\text{GHz}$ typ ($V_{CE}=4\text{V}$).
- Low voltage operation.
- High gain : $|S_{21e}|^2=17.5\text{dB}$ typ ($V_{CE}=1\text{V}$, f=1.8GHz).
: $|S_{21e}|^2=18.5\text{dB}$ typ ($V_{CE}=2\text{V}$, f=1.8GHz).

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		14	V
Collector-to-Emitter Voltage	V_{CEO}		4.5	V
Emitter-to-Base Voltage	V_{EBO}		1	V
Collector Current	I_C		80	mA
Collector Dissipation	P_C		100	mW
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=5\text{V}$, $I_E=0$			200	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=1\text{V}$, $I_C=0$			70	μA
DC Current Gain	h_{FE}	$V_{CE}=3.5\text{V}$, $I_C=20\text{mA}$	50		200	
Gain-Bandwidth Product	f_{T1}	$V_{CE}=1\text{V}$, $I_C=10\text{mA}$		20		GHz
	f_{T2}	$V_{CE}=4\text{V}$, $I_C=50\text{mA}$	22	29		GHz
Reverse Transfer Capacitance	C_{re}	$V_{CB}=1\text{V}$, f=1MHz		0.15	0.25	pF
Forward Transfer Gain	$ S_{21e} ^2_1$	$V_{CE}=1\text{V}$, $I_C=10\text{mA}$, f=1.8GHz		17.5		dB
	$ S_{21e} ^2_2$	$V_{CE}=2\text{V}$, $I_C=20\text{mA}$, f=1.8GHz	16	18.5		dB
Noise Figure	NF	$V_{CE}=2\text{V}$, $I_C=5\text{mA}$, f=1.8GHz		0.9	1.3	dB

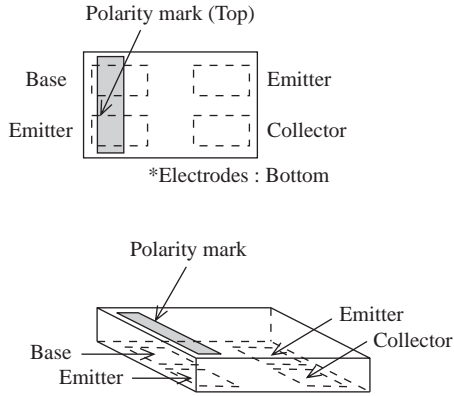
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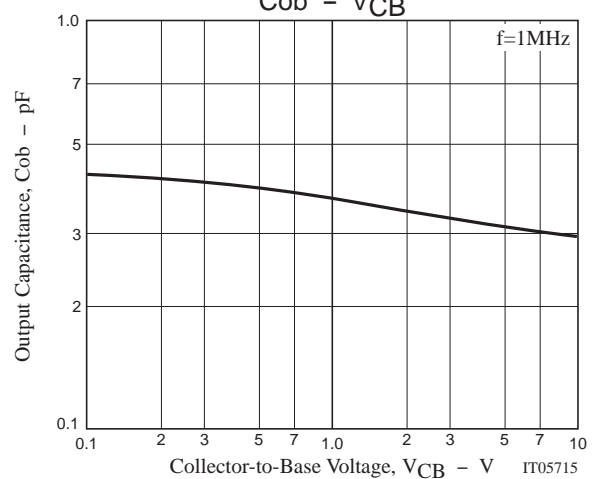
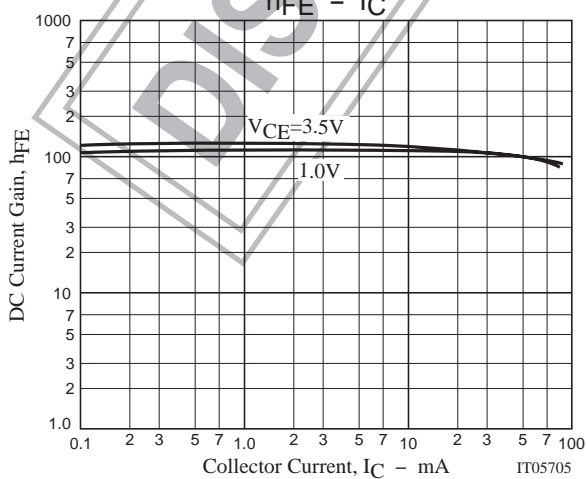
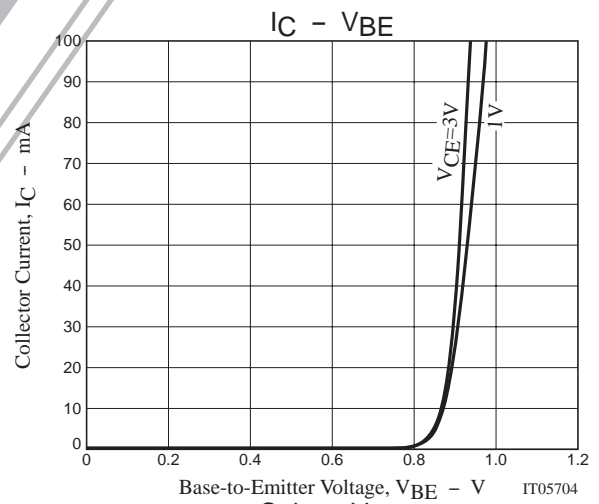
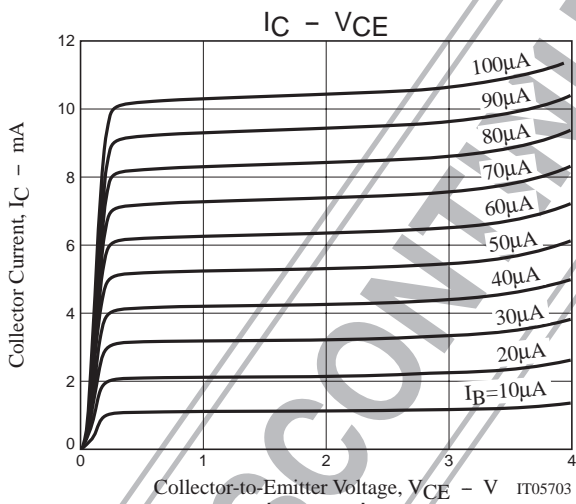
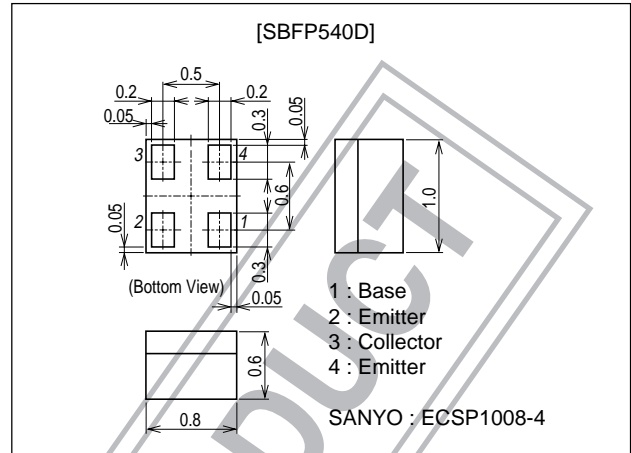
SBFP540D

Electrical Connection (Top view)

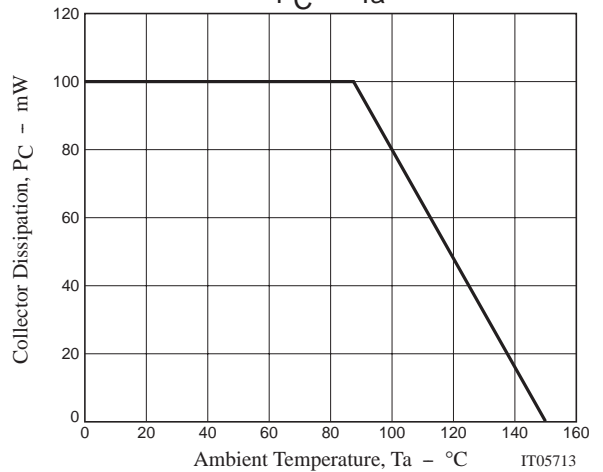
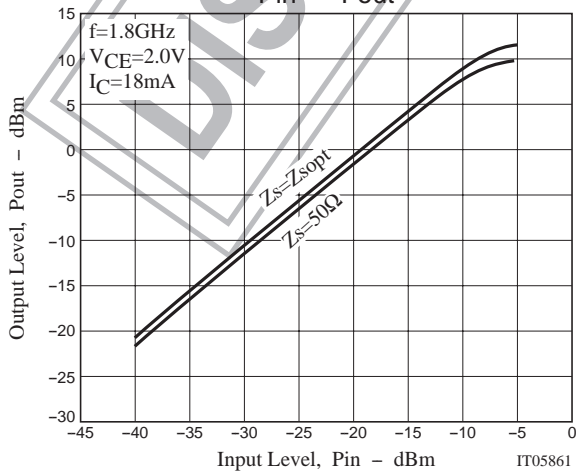
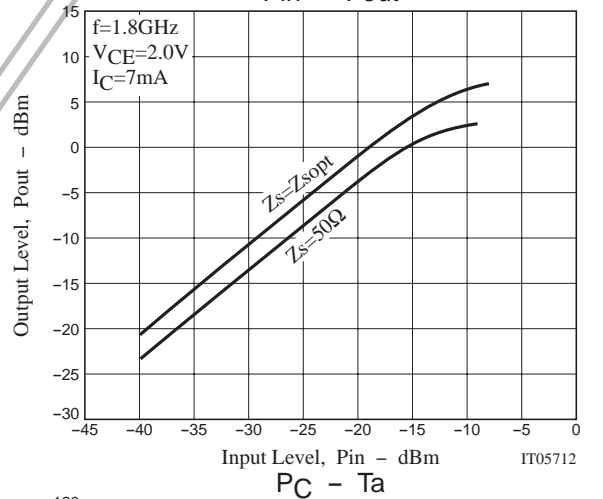
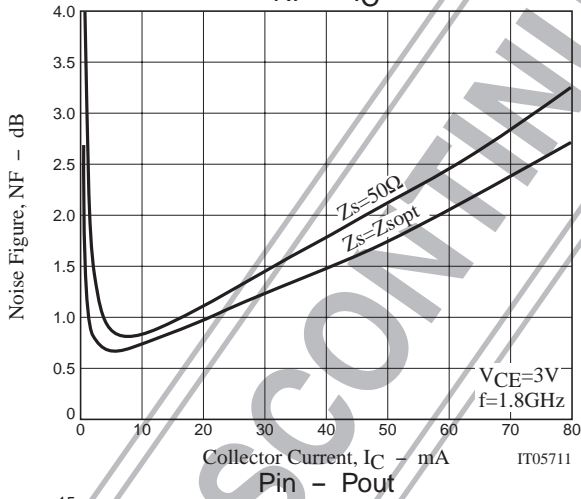
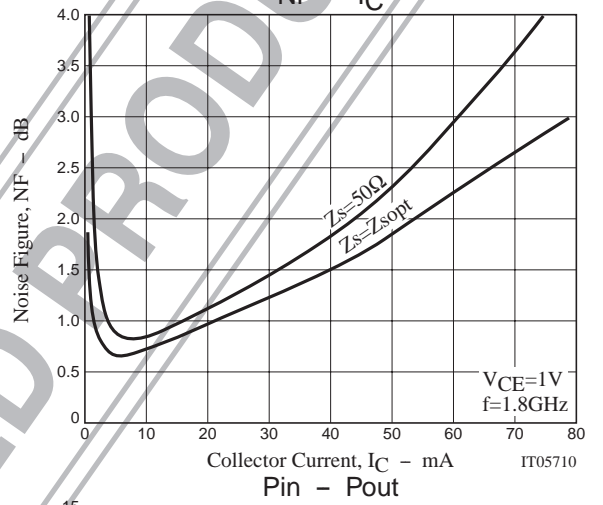
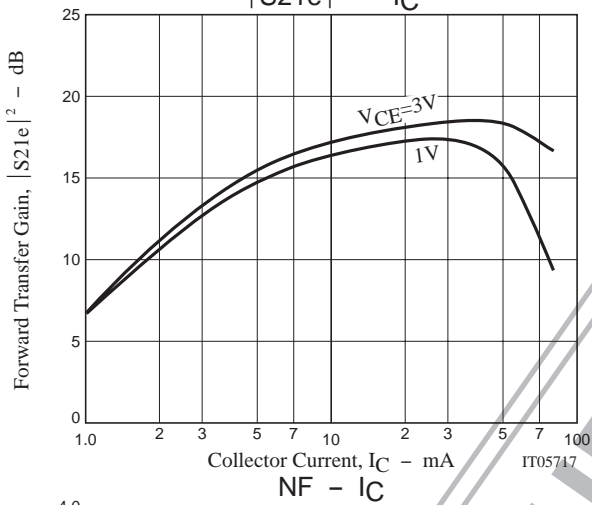
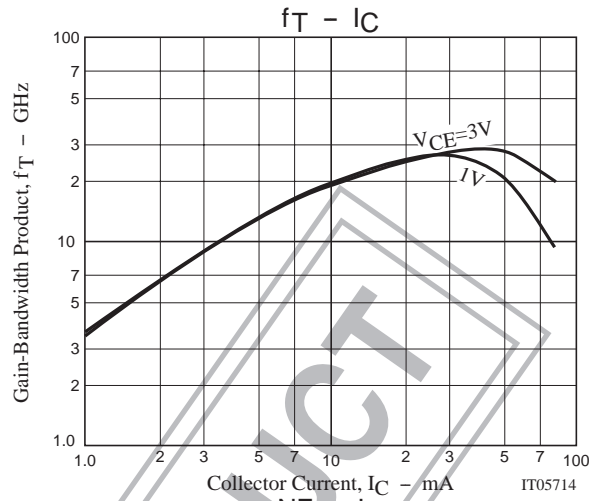
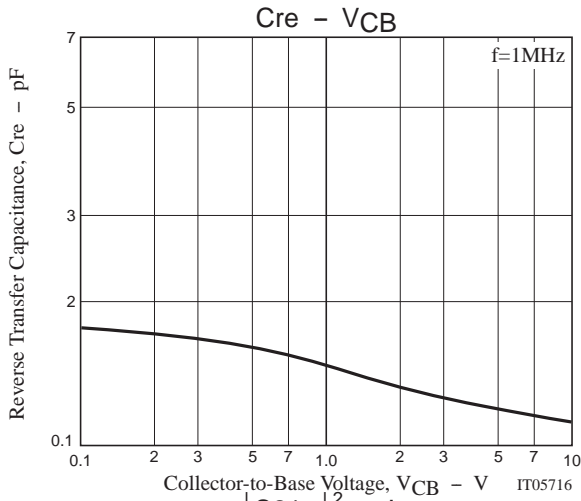


Package Dimensions

unit : mm
2215



SBFP540D



SBFP540D

S Parameters (Common emitter)

VCE=1V, IC=1mA, ZO=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.971	-12.2	2.571	168.3	0.020	80.9	0.994	-6.2
400	0.963	-23.7	2.260	158.6	0.040	75.5	0.972	-12.0
600	0.943	-36.8	2.528	150.1	0.060	68.3	0.944	-17.1
800	0.919	-48.6	2.506	140.7	0.076	61.9	0.911	-22.1
1000	0.903	-58.3	2.176	133.1	0.090	54.3	0.872	-26.7
1200	0.864	-72.4	2.570	125.6	0.102	49.6	0.833	-30.0
1400	0.835	-83.6	2.532	119.0	0.113	43.7	0.810	-33.2
1600	0.827	-90.8	2.156	113.6	0.116	37.8	0.760	-38.0
1800	0.795	-100.9	2.175	107.1	0.123	34.7	0.731	-39.0
2000	0.779	-108.3	1.992	101.8	0.127	31.0	0.710	-41.4
2200	0.751	-117.4	1.997	96.5	0.129	27.5	0.687	-43.6
2400	0.744	-123.6	1.822	92.2	0.130	24.1	0.670	-45.7
2600	0.728	-130.6	1.745	87.7	0.129	21.7	0.648	-47.7
2800	0.712	-137.5	1.695	83.4	0.128	19.5	0.630	-49.4
3000	0.704	-143.0	1.589	79.5	0.127	17.7	0.617	-51.1
3200	0.687	-149.6	1.582	75.6	0.125	16.3	0.605	-52.8
3400	0.683	-154.6	1.496	72.2	0.123	15.3	0.595	-54.6
3600	0.675	-159.9	1.441	68.9	0.120	14.5	0.585	-56.4
3800	0.668	-165.1	1.400	65.5	0.118	13.9	0.576	-58.1
4000	0.666	-169.5	1.330	62.3	0.116	13.7	0.569	-59.8
4200	0.658	-174.3	1.302	59.2	0.112	14.4	0.563	-61.6
4400	0.654	-178.6	1.253	56.2	0.111	14.9	0.558	-63.4
4600	0.653	177.2	1.205	53.4	0.108	15.9	0.552	-65.2
4800	0.648	173.0	1.173	50.6	0.106	17.5	0.547	-67.3
5000	0.648	169.1	1.122	48.0	0.106	19.2	0.543	-69.1
5200	0.645	165.2	1.095	45.4	0.103	21.2	0.539	-71.1
5400	0.643	161.5	1.065	42.9	0.103	24.0	0.534	-73.2
5600	0.642	157.8	1.030	40.5	0.104	26.3	0.531	-75.2
5800	0.639	154.2	1.004	38.1	0.105	29.1	0.528	-77.4
6000	0.639	150.7	0.971	35.8	0.107	31.7	0.523	-79.4

DISCONTINUED PRODUCT

SBFP540D

S Parameters (Common emitter)

V_{CE}=1V, I_C=5mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.868	-19.7	10.544	160.3	0.020	79.9	0.965	-13.4
400	0.836	-36.6	8.931	147.2	0.037	69.5	0.886	-25.0
600	0.764	-58.5	9.686	135.5	0.048	59.7	0.799	-33.7
800	0.713	-74.2	8.612	125.7	0.058	54.4	0.714	-41.0
1000	0.658	-89.1	7.808	116.6	0.064	50.3	0.635	-46.7
1200	0.592	-105.4	7.463	107.8	0.070	47.8	0.572	-50.3
1400	0.557	-116.7	6.715	101.6	0.074	44.8	0.529	-53.4
1600	0.533	-126.1	6.042	96.5	0.077	44.3	0.477	-56.6
1800	0.513	-134.2	5.454	91.9	0.081	43.3	0.443	-58.1
2000	0.498	-141.2	4.966	88.0	0.084	42.6	0.415	-59.8
2200	0.482	-148.1	4.580	84.2	0.088	42.7	0.392	-61.3
2400	0.476	-153.6	4.206	81.0	0.091	42.7	0.372	-62.7
2600	0.466	-159.4	3.928	77.8	0.094	42.6	0.355	-63.9
2800	0.459	-164.5	3.670	74.8	0.098	43.2	0.340	-65.0
3000	0.454	-169.0	3.438	72.0	0.101	43.6	0.328	-65.9
3200	0.449	-173.6	3.255	69.4	0.105	43.5	0.318	-67.3
3400	0.446	-177.7	3.071	66.8	0.109	43.8	0.309	-68.4
3600	0.444	178.4	2.919	64.3	0.113	44.1	0.302	-69.8
3800	0.442	174.6	2.783	61.8	0.117	44.2	0.295	-70.9
4000	0.441	171.1	2.650	59.4	0.121	44.2	0.289	-72.1
4200	0.440	167.6	2.538	57.1	0.126	44.2	0.283	-73.6
4400	0.439	164.3	2.431	54.8	0.131	44.2	0.279	-75.1
4600	0.440	161.0	2.331	52.5	0.136	44.4	0.275	-76.5
4800	0.439	157.9	2.244	50.3	0.141	44.2	0.271	-78.2
5000	0.439	154.8	2.157	48.2	0.146	44.0	0.268	-79.8
5200	0.439	151.8	2.086	46.0	0.150	43.6	0.265	-81.4
5400	0.439	148.9	2.016	43.9	0.156	43.2	0.263	-83.2
5600	0.440	145.9	1.949	41.8	0.162	42.8	0.259	-84.9
5800	0.440	143.2	1.886	39.7	0.167	42.4	0.257	-86.8
6000	0.441	140.4	1.828	37.7	0.172	42.1	0.255	-88.6

DISCONTINUED PRODUCT

SBFP540D

S Parameters (Common emitter)

VCE=1V, IC=10mA, ZO=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.750	-28.2	18.567	154.3	0.018	74.4	0.926	-20.0
400	0.687	-52.3	15.444	138.2	0.030	65.2	0.787	-34.9
600	0.588	-80.0	15.344	123.8	0.040	59.5	0.665	-44.6
800	0.534	-97.7	12.865	113.7	0.047	56.1	0.566	-51.9
1000	0.481	-113.6	11.102	105.1	0.052	54.2	0.489	-57.2
1200	0.446	-126.5	9.656	98.5	0.057	54.1	0.431	-60.5
1400	0.426	-136.4	8.422	93.4	0.062	53.9	0.389	-63.6
1600	0.411	-144.5	7.440	89.3	0.067	53.5	0.350	-66.0
1800	0.403	-151.5	6.637	85.7	0.072	54.2	0.321	-67.7
2000	0.396	-157.6	5.998	82.5	0.078	54.2	0.298	-69.3
2200	0.390	-163.2	5.472	79.4	0.083	54.2	0.279	-70.9
2400	0.386	-168.0	5.020	76.7	0.088	54.1	0.262	-72.1
2600	0.382	-172.7	4.648	74.1	0.093	54.0	0.249	-73.2
2800	0.379	-176.8	4.326	71.6	0.098	54.1	0.237	-74.3
3000	0.377	179.3	4.041	69.3	0.104	54.0	0.228	-75.5
3200	0.376	175.5	3.803	67.0	0.110	53.7	0.221	-76.8
3400	0.375	172.2	3.588	64.8	0.115	53.7	0.213	-78.0
3600	0.374	168.7	3.399	62.6	0.121	53.0	0.207	-79.4
3800	0.375	165.5	3.231	60.4	0.128	52.3	0.202	-80.6
4000	0.374	162.5	3.077	58.3	0.134	51.7	0.197	-81.9
4200	0.374	159.4	2.940	56.2	0.140	51.2	0.193	-83.5
4400	0.375	156.5	2.814	54.1	0.146	50.6	0.189	-85.0
4600	0.376	153.7	2.696	52.1	0.152	49.7	0.186	-86.8
4800	0.377	150.9	2.593	50.1	0.158	48.8	0.183	-88.3
5000	0.378	148.3	2.494	48.1	0.165	48.1	0.181	-90.5
5200	0.378	145.6	2.405	46.1	0.170	47.4	0.179	-92.0
5400	0.380	143.0	2.321	44.2	0.176	46.5	0.176	-93.8
5600	0.380	140.4	2.245	42.2	0.182	45.6	0.174	-95.6
5800	0.381	137.9	2.171	40.4	0.189	44.5	0.173	-97.6
6000	0.382	135.3	2.105	38.5	0.195	43.6	0.171	-99.4

DISCONTINUED PRODUCT

SBFP540D

S Parameters (Common emitter)

V_{CE}=1V, I_C=20mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.549	-51.0	26.218	145.8	0.016	68.4	0.865	-26.6
400	0.497	-88.0	21.419	125.9	0.026	64.3	0.675	-43.6
600	0.432	-106.0	19.209	113.2	0.033	62.4	0.541	-53.2
800	0.400	-122.5	15.384	104.2	0.039	61.6	0.447	-59.7
1000	0.377	-135.3	12.749	97.6	0.045	61.2	0.380	-64.4
1200	0.363	-145.1	10.781	92.5	0.052	61.6	0.333	-67.9
1400	0.356	-152.9	9.307	88.4	0.057	61.9	0.296	-70.4
1600	0.351	-159.6	8.148	85.0	0.064	61.9	0.269	-72.8
1800	0.348	-165.4	7.237	81.9	0.070	62.5	0.245	-75.1
2000	0.346	-170.2	6.519	79.2	0.076	62.3	0.226	-77.0
2200	0.345	-174.9	5.931	76.6	0.082	61.5	0.211	-78.8
2400	0.343	-179.0	5.437	74.2	0.089	61.5	0.198	-80.2
2600	0.343	177.3	5.018	71.9	0.095	60.7	0.187	-81.7
2800	0.342	173.7	4.663	69.7	0.102	60.8	0.178	-83.0
3000	0.342	170.4	4.355	67.6	0.108	59.7	0.171	-84.2
3200	0.342	167.3	4.090	65.6	0.115	59.2	0.165	-86.0
3400	0.342	164.3	3.857	63.5	0.122	58.5	0.159	-87.7
3600	0.342	161.4	3.652	61.5	0.129	57.3	0.155	-89.3
3800	0.343	158.7	3.467	59.5	0.135	56.4	0.151	-90.7
4000	0.344	155.8	3.303	57.6	0.142	55.7	0.147	-92.5
4200	0.344	153.2	3.152	55.6	0.149	54.7	0.144	-93.7
4400	0.345	150.6	3.014	53.7	0.155	53.4	0.141	-95.8
4600	0.347	148.1	2.889	51.8	0.162	52.3	0.139	-97.8
4800	0.348	145.7	2.776	49.9	0.168	51.3	0.137	-100.0
5000	0.349	143.2	2.670	47.9	0.176	50.2	0.135	-101.8
5200	0.349	140.7	2.573	46.1	0.182	49.1	0.134	-103.8
5400	0.351	138.3	2.483	44.3	0.189	48.0	0.132	-105.6
5600	0.352	135.9	2.402	42.4	0.195	46.7	0.132	-107.9
5800	0.353	133.7	2.322	40.6	0.202	45.5	0.130	-110.2
6000	0.354	131.4	2.249	38.8	0.208	44.5	0.129	-112.2

DISCONTINUED PRODUCT

SBFP540D

S Parameters (Common emitter)

VCE=1V, IC=30mA, ZO=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.445	-81.5	28.718	138.9	0.015	76.3	0.815	-30.8
400	0.445	-116.1	22.581	118.0	0.024	65.0	0.608	-47.7
600	0.388	-126.0	19.567	107.7	0.030	65.4	0.473	-56.6
800	0.370	-139.0	15.579	100.0	0.036	65.4	0.388	-62.8
1000	0.353	-148.2	12.938	94.3	0.043	64.7	0.331	-67.2
1200	0.347	-156.2	10.900	89.9	0.049	65.1	0.288	-70.5
1400	0.343	-162.5	9.406	86.2	0.056	66.5	0.258	-73.2
1600	0.341	-168.2	8.231	83.1	0.063	66.9	0.230	-75.7
1800	0.341	-173.1	7.297	80.2	0.069	65.7	0.213	-77.9
2000	0.341	-177.3	6.572	77.7	0.076	65.2	0.196	-80.1
2200	0.341	178.7	5.971	75.3	0.083	65.0	0.183	-81.7
2400	0.340	175.2	5.479	73.0	0.089	64.0	0.172	-83.3
2600	0.340	171.8	5.057	70.8	0.096	63.6	0.163	-85.0
2800	0.340	168.7	4.698	68.7	0.104	63.1	0.155	-86.2
3000	0.340	165.7	4.386	66.7	0.110	61.9	0.149	-87.8
3200	0.340	162.9	4.118	64.7	0.117	61.0	0.144	-89.6
3400	0.341	160.1	3.883	62.8	0.124	60.2	0.140	-91.2
3600	0.342	157.6	3.676	60.8	0.131	59.0	0.136	-93.3
3800	0.343	154.9	3.489	58.9	0.138	58.1	0.132	-95.0
4000	0.344	152.3	3.323	56.9	0.145	57.0	0.129	-96.7
4200	0.345	149.9	3.171	55.0	0.152	55.8	0.127	-98.5
4400	0.346	147.4	3.033	53.1	0.159	54.8	0.125	-100.3
4600	0.347	145.2	2.908	51.3	0.166	53.5	0.123	-102.8
4800	0.348	142.7	2.795	49.4	0.172	52.3	0.122	-104.8
5000	0.350	140.4	2.688	47.6	0.180	51.1	0.121	-107.2
5200	0.350	138.0	2.591	45.7	0.186	49.8	0.120	-109.4
5400	0.352	135.7	2.498	43.9	0.193	48.7	0.118	-111.4
5600	0.353	133.5	2.417	42.1	0.200	47.4	0.117	-113.8
5800	0.353	131.4	2.337	40.3	0.206	46.2	0.117	-116.2
6000	0.354	128.9	2.265	38.5	0.212	44.9	0.117	-118.1

DISCONTINUED PRODUCT

SBFP540D

S Parameters (Common emitter)

V_{CE}=3V, I_C=1mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.975	-11.7	2.468	169.3	0.018	78.3	0.994	-4.9
400	0.967	-22.5	2.182	160.2	0.031	76.2	0.981	-9.6
600	0.950	-34.7	2.442	152.1	0.046	71.3	0.961	-13.9
800	0.928	-46.1	2.457	143.1	0.061	63.8	0.935	-18.1
1000	0.913	-55.4	2.115	135.8	0.072	58.3	0.907	-22.0
1200	0.876	-68.9	2.537	128.6	0.082	52.7	0.874	-25.1
1400	0.850	-79.9	2.533	122.1	0.092	46.9	0.856	-27.9
1600	0.843	-86.7	2.119	116.9	0.095	41.4	0.814	-32.2
1800	0.810	-96.9	2.178	110.3	0.101	38.7	0.788	-33.2
2000	0.795	-104.3	1.993	105.1	0.104	34.1	0.768	-35.4
2200	0.765	-113.5	2.021	99.8	0.107	30.5	0.748	-37.4
2400	0.756	-119.9	1.847	95.4	0.108	27.3	0.731	-39.4
2600	0.741	-126.9	1.765	90.9	0.107	24.9	0.711	-41.3
2800	0.722	-133.9	1.726	86.6	0.106	22.6	0.694	-42.8
3000	0.714	-139.6	1.611	82.7	0.105	20.9	0.682	-44.3
3200	0.695	-146.4	1.617	78.7	0.104	19.4	0.669	-45.9
3400	0.689	-151.7	1.529	75.3	0.102	18.1	0.660	-47.4
3600	0.681	-157.0	1.471	72.0	0.099	17.9	0.650	-49.0
3800	0.671	-162.3	1.433	68.5	0.097	17.3	0.641	-50.6
4000	0.669	-166.9	1.360	65.4	0.094	17.5	0.634	-52.1
4200	0.660	-172.0	1.333	62.2	0.092	18.2	0.628	-53.7
4400	0.655	-176.5	1.287	59.2	0.090	19.5	0.622	-55.4
4600	0.654	179.3	1.234	56.3	0.088	20.8	0.616	-57.0
4800	0.648	174.9	1.205	53.6	0.086	22.8	0.611	-58.8
5000	0.647	170.9	1.149	51.0	0.085	25.0	0.607	-60.5
5200	0.644	166.8	1.123	48.4	0.084	27.9	0.602	-62.3
5400	0.640	162.9	1.091	45.8	0.084	31.0	0.597	-64.1
5600	0.640	159.1	1.054	43.4	0.084	34.1	0.593	-65.9
5800	0.636	155.4	1.028	41.0	0.086	37.6	0.590	-67.8
6000	0.636	151.8	0.993	38.7	0.088	40.8	0.586	-69.6

DISCONTINUED PRODUCT

SBFP540D

S Parameters (Common emitter)

VCE=3V, IC=5mA, ZO=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.874	-18.0	10.856	161.8	0.014	81.8	0.974	-11.0
400	0.847	-33.7	9.289	149.2	0.027	70.7	0.911	-19.9
600	0.775	-53.8	10.092	137.9	0.038	62.4	0.838	-26.9
800	0.723	-69.0	9.134	128.1	0.046	57.6	0.766	-33.0
1000	0.669	-82.7	8.267	119.3	0.052	53.8	0.697	-37.6
1200	0.594	-98.9	8.044	110.1	0.058	51.0	0.640	-40.5
1400	0.553	-110.3	7.288	103.8	0.061	48.5	0.600	-43.0
1600	0.526	-119.7	6.547	98.6	0.064	47.7	0.550	-45.6
1800	0.501	-128.0	5.937	93.9	0.068	47.4	0.519	-46.6
2000	0.483	-135.2	5.407	89.9	0.071	46.6	0.492	-47.9
2200	0.464	-142.4	4.995	86.1	0.073	46.8	0.470	-49.0
2400	0.456	-148.2	4.588	82.8	0.077	46.8	0.451	-50.0
2600	0.443	-154.2	4.284	79.5	0.080	46.8	0.434	-50.8
2800	0.434	-159.6	4.005	76.5	0.083	47.1	0.419	-51.7
3000	0.428	-164.4	3.749	73.8	0.085	47.6	0.408	-52.4
3200	0.420	-169.2	3.549	71.1	0.088	47.9	0.398	-53.3
3400	0.417	-173.5	3.350	68.6	0.092	48.4	0.389	-54.2
3600	0.413	-177.6	3.181	66.1	0.096	48.4	0.381	-55.2
3800	0.411	178.3	3.031	63.6	0.100	48.9	0.374	-56.1
4000	0.411	174.7	2.886	61.2	0.103	48.8	0.369	-57.1
4200	0.408	171.1	2.764	58.9	0.107	49.2	0.364	-58.2
4400	0.407	167.5	2.645	56.6	0.112	49.0	0.360	-59.5
4600	0.407	164.1	2.535	54.4	0.116	49.4	0.355	-60.6
4800	0.406	160.9	2.438	52.3	0.121	49.0	0.351	-61.9
5000	0.406	157.7	2.344	50.1	0.126	49.0	0.348	-63.3
5200	0.406	154.5	2.263	48.0	0.130	48.9	0.344	-64.5
5400	0.406	151.4	2.187	45.9	0.135	48.6	0.340	-65.9
5600	0.406	148.6	2.112	43.8	0.140	48.4	0.338	-67.5
5800	0.407	145.6	2.044	41.8	0.145	47.8	0.335	-68.9
6000	0.408	142.7	1.980	39.8	0.150	47.6	0.332	-70.3

DISCONTINUED PRODUCT

SBFP540D

S Parameters (Common emitter)

V_{CE}=3V, I_C=10mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.770	-23.8	18.909	157.0	0.013	75.5	0.946	-15.3
400	0.720	-44.4	15.969	141.8	0.023	67.8	0.835	-26.7
600	0.608	-70.2	15.986	127.5	0.033	62.3	0.732	-34.3
800	0.546	-87.4	13.664	117.1	0.037	59.7	0.644	-39.9
1000	0.486	-103.0	11.898	108.3	0.043	57.5	0.571	-43.7
1200	0.438	-116.4	10.470	101.1	0.048	56.6	0.516	-46.1
1400	0.410	-126.9	9.173	95.7	0.053	56.2	0.474	-48.1
1600	0.391	-135.6	8.115	91.4	0.057	57.3	0.437	-49.4
1800	0.378	-142.9	7.249	87.6	0.060	56.5	0.409	-50.7
2000	0.368	-149.4	6.551	84.3	0.066	56.8	0.386	-51.5
2200	0.358	-155.5	5.978	81.2	0.070	57.4	0.368	-52.3
2400	0.353	-160.8	5.482	78.4	0.075	57.5	0.352	-53.0
2600	0.348	-165.9	5.076	75.8	0.079	57.7	0.338	-53.7
2800	0.344	-170.6	4.721	73.3	0.084	57.2	0.327	-54.2
3000	0.341	-174.9	4.410	70.9	0.089	57.1	0.318	-54.7
3200	0.338	-178.9	4.150	68.6	0.094	57.0	0.309	-55.4
3400	0.336	177.4	3.914	66.4	0.099	56.5	0.303	-56.3
3600	0.335	173.8	3.706	64.3	0.104	56.4	0.297	-57.2
3800	0.335	170.2	3.520	62.1	0.109	56.1	0.291	-58.0
4000	0.335	167.0	3.353	60.0	0.114	55.5	0.286	-58.9
4200	0.334	163.7	3.199	57.9	0.120	54.8	0.282	-59.9
4400	0.335	160.7	3.061	55.8	0.125	54.3	0.278	-61.1
4600	0.336	157.7	2.933	53.8	0.130	53.6	0.275	-62.2
4800	0.337	154.8	2.819	51.8	0.136	53.1	0.272	-63.4
5000	0.337	151.9	2.709	49.9	0.141	52.2	0.269	-64.8
5200	0.337	149.1	2.612	48.0	0.147	51.5	0.265	-66.0
5400	0.338	146.4	2.521	46.0	0.152	50.7	0.263	-67.4
5600	0.340	143.7	2.436	44.1	0.158	50.1	0.260	-68.8
5800	0.340	141.0	2.355	42.2	0.163	49.0	0.258	-70.3
6000	0.341	138.4	2.283	40.3	0.169	48.2	0.255	-71.7

DISCONTINUED PRODUCT

SBFP540D

S Parameters (Common emitter)

VCE=3V, IC=20mA, ZO=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.604	-33.8	30.487	151.6	0.010	77.2	0.897	-20.3
400	0.523	-63.2	25.012	132.4	0.020	65.5	0.743	-32.8
600	0.423	-90.5	21.161	117.0	0.027	64.2	0.622	-40.0
800	0.377	-108.2	17.068	107.4	0.033	64.0	0.534	-44.4
1000	0.345	-122.3	14.146	100.2	0.038	65.3	0.470	-47.4
1200	0.326	-133.6	11.985	94.8	0.043	64.7	0.421	-49.1
1400	0.314	-142.2	10.335	90.3	0.049	63.4	0.381	-50.3
1600	0.306	-150.0	9.054	86.8	0.053	64.9	0.357	-51.8
1800	0.300	-156.5	8.045	83.6	0.059	64.4	0.333	-52.6
2000	0.297	-162.0	7.244	80.8	0.065	64.5	0.314	-53.1
2200	0.294	-167.4	6.584	78.2	0.070	64.4	0.298	-53.7
2400	0.292	-172.0	6.029	75.7	0.076	64.0	0.285	-54.2
2600	0.290	-176.3	5.565	73.5	0.081	63.6	0.275	-54.7
2800	0.289	179.6	5.168	71.3	0.087	63.3	0.266	-55.1
3000	0.288	176.1	4.822	69.2	0.092	62.8	0.258	-55.6
3200	0.289	172.5	4.529	67.1	0.098	62.1	0.252	-56.4
3400	0.288	169.3	4.267	65.2	0.104	61.2	0.246	-57.2
3600	0.289	166.1	4.040	63.2	0.110	60.7	0.241	-58.2
3800	0.289	163.0	3.834	61.3	0.116	59.9	0.236	-59.1
4000	0.289	160.1	3.647	59.3	0.122	58.6	0.232	-59.8
4200	0.292	157.3	3.482	57.4	0.128	58.2	0.229	-60.9
4400	0.292	154.5	3.329	55.5	0.133	56.8	0.226	-62.1
4600	0.293	152.0	3.187	53.6	0.140	56.0	0.223	-63.2
4800	0.294	149.2	3.063	51.7	0.145	55.1	0.221	-64.5
5000	0.295	146.6	2.942	49.9	0.152	54.0	0.218	-65.8
5200	0.296	143.9	2.836	48.0	0.157	53.0	0.216	-67.0
5400	0.298	141.5	2.735	46.2	0.163	51.9	0.213	-68.6
5600	0.299	139.1	2.644	44.4	0.169	50.8	0.211	-69.9
5800	0.300	136.7	2.556	42.7	0.175	49.9	0.209	-71.3
6000	0.301	134.1	2.473	40.9	0.181	48.6	0.206	-72.8

DISCONTINUED PRODUCT

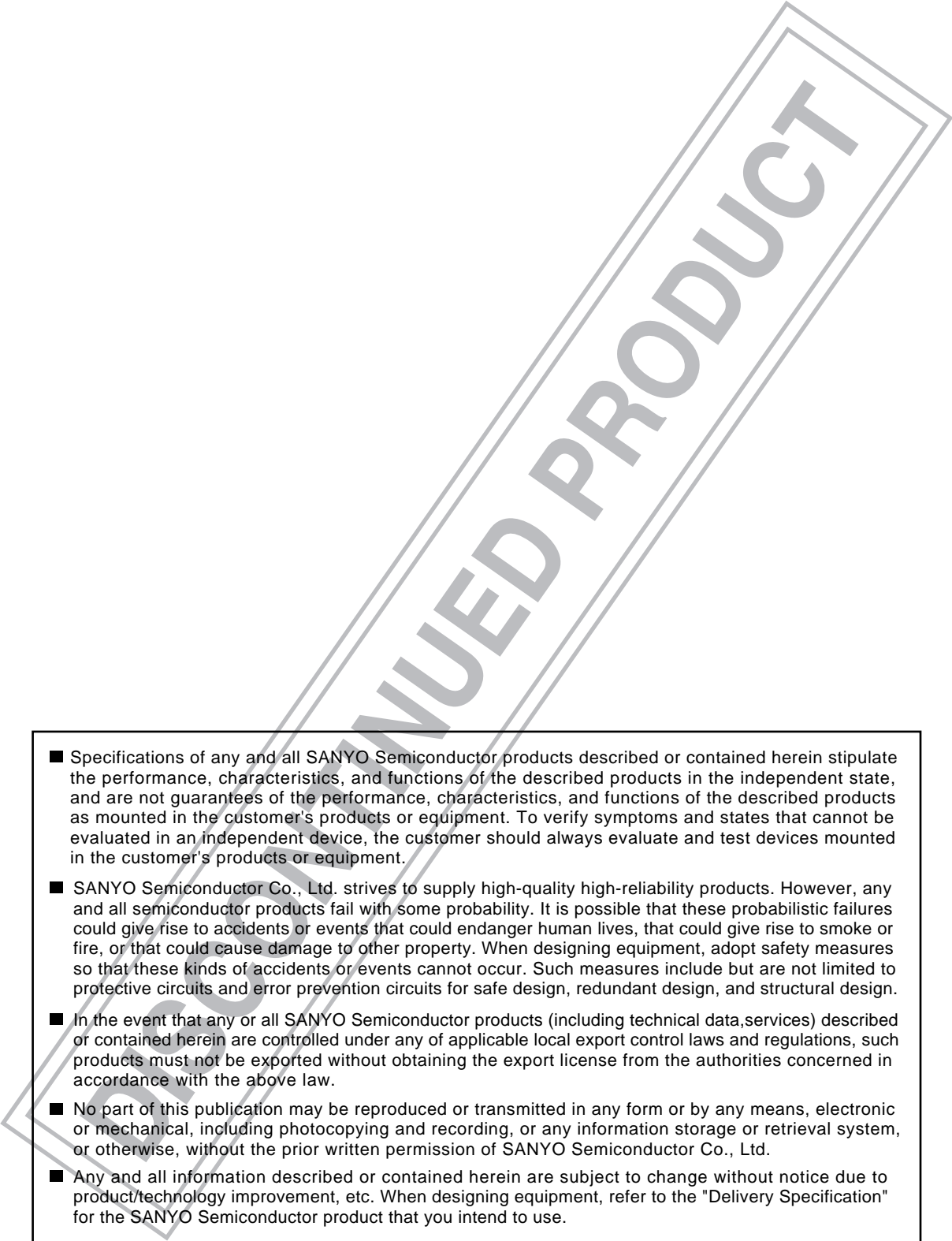
SBFP540D

S Parameters (Common emitter)

V_{CE}=3V, I_C=30mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
200	0.477	-42.7	37.774	147.8	0.012	73.4	0.862	-22.1
400	0.398	-77.5	29.431	126.6	0.019	69.1	0.693	-35.3
600	0.338	-103.2	22.957	112.6	0.025	69.6	0.569	-41.9
800	0.312	-120.2	18.116	103.7	0.030	68.3	0.485	-45.8
1000	0.296	-133.1	14.796	97.3	0.035	69.7	0.426	-48.1
1200	0.287	-142.9	12.448	92.4	0.042	68.5	0.382	-49.9
1400	0.282	-150.3	10.705	88.2	0.048	69.5	0.349	-51.0
1600	0.280	-157.8	9.325	85.2	0.053	68.8	0.324	-52.0
1800	0.276	-163.8	8.283	82.3	0.059	68.1	0.303	-52.5
2000	0.275	-168.8	7.453	79.6	0.065	68.0	0.286	-53.0
2200	0.275	-173.7	6.767	77.2	0.071	67.3	0.272	-53.7
2400	0.274	-177.8	6.195	74.9	0.077	66.6	0.260	-54.2
2600	0.274	178.2	5.720	72.7	0.083	66.3	0.251	-54.6
2800	0.273	174.6	5.306	70.6	0.089	65.5	0.243	-55.0
3000	0.274	171.5	4.949	68.7	0.095	64.9	0.236	-55.7
3200	0.274	168.1	4.644	66.7	0.100	64.1	0.230	-56.3
3400	0.275	165.1	4.376	64.8	0.106	62.8	0.225	-57.2
3600	0.275	162.3	4.141	62.9	0.113	62.3	0.221	-58.2
3800	0.277	159.2	3.930	61.0	0.119	61.0	0.217	-58.9
4000	0.278	156.7	3.741	59.1	0.125	59.9	0.214	-60.0
4200	0.280	154.1	3.568	57.2	0.131	58.9	0.210	-61.0
4400	0.280	151.3	3.409	55.4	0.137	57.9	0.208	-61.9
4600	0.281	149.0	3.267	53.6	0.143	56.8	0.206	-63.3
4800	0.283	146.3	3.139	51.7	0.149	55.8	0.202	-64.8
5000	0.284	143.9	3.017	50.0	0.155	54.5	0.200	-65.8
5200	0.285	141.6	2.906	48.2	0.161	53.5	0.198	-67.2
5400	0.287	138.9	2.801	46.4	0.168	52.5	0.194	-68.7
5600	0.288	136.9	2.707	44.6	0.173	51.3	0.194	-70.1
5800	0.290	134.3	2.617	42.9	0.179	50.0	0.191	-71.9
6000	0.290	132.0	2.532	41.1	0.185	49.0	0.188	-73.3

DISCONTINUED PRODUCT

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